## CLAIMS

1. A hammer shank stop rail mechanism for use in a piano and actuated by a control of the piano, said piano having a conventional keyboard and a conventional key action for each key, including a plurality of hammer shanks, hammers, and strings, said hammer shank stop rail mechanism comprising:

(a) a pedal dowel having a longitudinal body terminating in first and second ends, and extending substantially vertically within said piano, said first end being actuated by said control, wherein said pedal dowel is movable between a first, non-actuated position and a second, actuated position;

(b) an intermediate crank having a first end operatively attached to the second end of said pedal dowel and extending from the second end of said pedal dowel toward a second end of the crank, the second end of said crank being angled, said crank being movable by said pedal dowel between a first, non-actuated position and a second, actuated position; and

(c) an elongated hammer shank stop rail having longitudinal first and second sides and longitudinal first and second edges terminating in first and second ends, said stop rail being pivotally mounted along a longitudinal axis of rotation, the angled second end of said crank engaging one of the sides of said stop rail, said crank being rockable by said pedal dowel to pivot said stop rail between a first, non-actuated position and a second, actuated position, the first longitudinal edge of said stop rail, when in its actuated position, being positioned within the path of travel of said hammer shanks thereby preventing said hammers from striking their respective strings, the first longitudinal edge of said stop rail, when in its non-actuated position, being positioned outside the path of travel of said hammer shanks thereby allowing said

hammers to strike their respective strings, the first longitudinal edge of said stop rail being constructed of a material to quietly receive an impact from said hammer shanks.

2. The hammer shank stop rail mechanism as recited in claim 1, wherein the axis of rotation of said stop rail is located proximal to said second longitudinal edge.

3. The hammer shank stop rail mechanism as recited in claim 1, wherein the second longitudinal edge of said stop rail is nested against said crank at its angled elbow.

4. The hammer shank stop rail mechanism as recited in claim 1, wherein said crank is configured in an S-shape having both a lower angled elbow proximal to its first end and an upper angled elbow proximal to its second end.

5. The hammer shank stop rail mechanism as recited in claim 1, wherein said stop rail is configured in a transverse cross-section which has contoured surfaces for said longitudinal first and second sides.

6. The hammer shank stop rail mechanism as recited in claim 1, wherein said stop rail comprises a hard felt material having an exterior felt lining.

7. The hammer shank stop rail mechanism as recited in claim 1, wherein said stop rail comprises an extruded aluminum material having a rubber insert at its first longitudinal edge.

8. The hammer shank stop rail mechanism as recited in claim 1, wherein said stop rail comprises an extruded aluminum material having a rubber tube at its first longitudinal edge.

9. The hammer shank stop rail mechanism as recited in claim 1, wherein said control comprises a foot pedal.

10. The hammer shank stop rail mechanism as recited in claim 1, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano has its hammer shank stop rail mechanism being actuated by said control.

11. The hammer shank stop rail mechanism as recited in claim 1, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano does not have its hammer shank stop rail mechanism being actuated by said control.

12. A fluid-actuated hammer shank stop rail mechanism for use in a piano and actuated by a control of the piano, said piano having a conventional keyboard and a conventional key action for each key, including a plurality of hammer shanks, hammers, and strings, said fluid-actuated hammer shank stop rail mechanism comprising:

(a) a resilient bellows having an expanded, non-actuated condition and a collapsed, actuated condition, said bellows having a first closed end and a second open end comprising a port, fluid being forced from said bellows out through its open port upon actuation by said control thereby placing said bellows into its collapsed, actuated condition, and upon non-actuation by said control, said bellows returns to its expanded non-actuated condition via fluid entering said open port; and

(b) an elongated fluid-actuated hammer shank stop rail extending substantially horizontally and terminating in first and second ends, said fluid-actuated stop rail having a fixed rigid portion and an inflatable resilient contact member that expands upon receiving pressurized fluid from the port of said bellows via a fluid passageway that connects said bellows port to said contact member, said contact member extending longitudinally between said first and second ends and having a longitudinal contact surface portion which is constructed of a material

to quietly receive an impact from said hammer shanks, said contact member being inflatable and deflatable by said bellows between an extended, actuated position and a retracted, non-actuated position, said contact surface portion being positioned within the path of travel of said hammer shanks thereby preventing said hammers from striking their respective strings when the contact member is in its extended, actuated position, said contact surface portion being positioned outside the path of travel of said hammer shanks thereby allowing said hammers to strike their respective strings when the contact member is in its retracted, non-actuated position.

13. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, wherein the contact surface portion of said contact member comprises a resilient thin wall of plastic material affixed to and stiffening said contact member.

14. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, wherein the contact surface portion of said contact member comprises one or more threads of a reinforcing material contained within the wall of the contact member, thereby stiffening said contact member.

15. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, further comprising a return spring operatively attached to the first end of said bellows configured to assist in re-expanding the bellows.

16. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, wherein said control comprises a foot pedal.

17. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano has its hammer shank stop rail mechanism being actuated by said control.

18. The fluid-actuated hammer shank stop rail mechanism as recited in claim 12, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano does not have its hammer shank stop rail mechanism being actuated by said control.

19. A wippen-disabling mechanism for use in a piano and actuated by a control of the piano, said piano having a conventional keyboard and key action per key, including a plurality of wippens, and a plurality of keys having key tails, said wippen-disabling mechanism comprising:

(a) an actuator extending horizontally the width of said keyboard, said actuator overlying the plurality of keys proximal to said key tails and proximal to said plurality of wippens, said actuator having a central portion, a first arm and a second arm, said actuator being rotatable, between a non-actuated position and an actuated position, about an axis that extends longitudinally through said central portion, said first arm underlying said plurality of wippens in a position that is outside the movement paths of both said plurality of key tails and plurality of wippens when the actuator is in its non-actuated position, said first arm abutting and raising said plurality of wippens to a location in which said wippens cannot be operated by said key tails when the actuator is in its actuated position; and

(b) a plurality of springs affixed to the second arm of said actuator, each of said springs overlying one of said plurality of key tails, each said spring being spaced-apart from one of said key tails and thereby positioned outside the path of travel of said key tails thereby allowing said key tails to operate their respective wippens when said actuator is in its actuated position, each said spring being urged against a top surface of one of said key tails when said actuator is in its non-actuated position, thereby providing a force against said key tail top

surface.

20. The wippen-disabling mechanism as recited in claim 19, wherein the first and second arms of said actuator are oppositely directed.

21. The wippen-disabling mechanism as recited in claim 19, wherein said control comprises a foot pedal.

22. The wippen-disabling mechanism as recited in claim 19, further comprising a spring rate adjustment device and a spring position adjustment device.

23. The wippen-disabling mechanism as recited in claim 19, further comprising a felt pad affixed to the first arm of said actuator which makes contact with said wippens when said actuator is in its actuated position.

24. The wippen-disabling mechanism as recited in claim 19, wherein the force produced against the key tail top surface creates a back-force that a human user will feel when striking the corresponding key, said back-force approximating the key action back-force provided by the corresponding key action when said actuator is in its non-actuated position.

25. The wippen-disabling mechanism as recited in claim 19, wherein said plurality of springs each comprise a torsion spring having a first leg and a second leg, said first leg being affixed to the second arm of said actuator, said second leg being directed toward one of said key tails and causing a torsional load upon said torsion spring as it is urged against the top surface of said key tail when the actuator is in its non-actuated position.

26. The wippen-disabling mechanism as recited in claim 19, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano has its hammer shank stop rail mechanism being actuated by said control.

27. The wippen-disabling mechanism as recited in claim 19, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano does not have its hammer shank stop rail mechanism being actuated by said control.

28. A hammer shank stop rail mechanism for use in a piano and actuated by a control of the piano, said piano having a conventional keyboard and a conventional key action for each key, including a plurality of hammer shanks, hammers, and strings, said hammer shank stop rail mechanism comprising:

(a) a dowel having a longitudinal body terminating in first and second ends, and extending substantially vertically within said piano, said first end being actuated by said control, wherein said dowel is movable between a first, non-actuated position and a second, actuated position;

(b) an intermediate crank having a first end operatively attached to the second end of said dowel and extending from the second end of said dowel toward a second end of the crank, said crank being movable by said dowel between a first, non-actuated position and a second, actuated position; and

(c) an elongated hammer shank stop rail having longitudinal first and second sides and longitudinal first and second edges terminating in first and second ends, one of the sides of said stop rail being operatively attached to said crank at the second end of said crank, said crank being rockable by said dowel to transversely move said stop rail between a first, non-actuated position and a second, actuated position, the first longitudinal edge of said stop rail, when in its actuated position, being positioned within the path of travel of said hammer shanks thereby preventing said hammers from striking their respective strings, the first longitudinal edge of said stop rail, when in its non-actuated position, being positioned outside the path of travel of said hammer shanks

thereby allowing said hammers to strike their respective strings, the first longitudinal edge of said stop rail being constructed of a material to quietly receive an impact from said hammer shanks.

29. The hammer shank stop rail mechanism as recited in claim 28, wherein said stop rail is configured in a transverse cross-section which has contoured surfaces for said longitudinal first and second sides.

30. The hammer shank stop rail mechanism as recited in claim 28, wherein said stop rail comprises a hard felt material having an exterior felt lining.

31. The hammer shank stop rail mechanism as recited in claim 28, wherein said stop rail comprises an extruded aluminum material having a rubber insert at its first longitudinal edge.

32. The hammer shank stop rail mechanism as recited in claim 28, wherein said stop rail comprises an extruded aluminum material having a rubber tube at its first longitudinal edge.

33. The hammer shank stop rail mechanism as recited in claim 28, wherein said control comprises a hand-actuator mounted beneath the conventional keyboard, said hand-actuator including a substantially horizontal rod which is longitudinally translatable and having first and second ends, a handle located at the rod's first end, a pivotable link pivotally attached to the rod's second end, a pivotable second crank that is pivotally attached to said pivotable link and movable between a first, non-actuated position and a second, actuated position by said pivotable link, said pivotable second crank being operatively connected to the first end of said dowel such that, when the second crank is moved to its first, non-actuated position, said dowel, intermediate first crank, and stop rail are all moved to their respective first non-actuated positions, and when the second crank is moved to its second, actuated position, said dowel, first intermediate crank, and stop rail are all moved to their respective second, actuated positions.

34. The hammer shank stop rail mechanism as recited in claim 28, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano has its hammer shank stop rail mechanism being actuated by said control.

35. The hammer shank stop rail mechanism as recited in claim 28, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano does not have its hammer shank stop rail mechanism being actuated by said control.

36. A hammer shank stop rail mechanism for use in a piano and actuated by a control of the piano, said piano having a conventional keyboard and a conventional key action for each key, including a plurality of hammer shanks, hammers, and strings, said hammer shank stop rail mechanism comprising:

(a) a movable cable having first and second ends, said cable's first end being operatively attached to said control of said piano, said cable's second end being operatively attached to a spring, said cable having a first, non-actuated position when said control is non-actuated, said cable having a second, actuated position when said control is actuated;

(b) a rotatable cam having an eccentric lobe portion and a non-eccentric shaft portion, said cam having an axis of rotation extending substantially horizontal and within said piano, said cam having its non-eccentric shaft operatively attached to said cable near the second end of the cable, said cam rotating between a first, non-actuated position, when said cable is in its non-actuated position, and a second, actuated position, when said cable is in its actuated position;

(c) an intermediate bracket having a first end operatively abutting against the eccentric lobe portion of said cam and a second end, said bracket

being movable by said cam between a first, non-actuated position and a second, actuated position; and

(d) an elongated hammer shank stop rail having longitudinal first and second sides and longitudinal first and second edges terminating in first and second ends, said stop rail being pivotally mounted along a longitudinal axis of rotation, the second end of said bracket being operatively attached to one of the sides of said stop rail, said bracket being movable by said cam to pivot said stop rail between a first, non-actuated position and a second, actuated position, the first longitudinal edge of said stop rail, when in its actuated position, being positioned within the path of travel of said hammer shanks thereby preventing said hammers from striking their respective strings, the first longitudinal edge of said stop rail, when in its non-actuated position, being positioned outside the path of travel of said hammer shanks thereby allowing said hammers to strike their respective strings, the first longitudinal edge of said stop rail being constructed of a material to quietly receive an impact from said hammer shanks.

37. The hammer shank stop rail mechanism as recited in claim 36, wherein the second end of said intermediate bracket is affixed to said stop rail by at least one fastener, and the surface of the first end of said bracket that wears against the eccentric portion of said cam comprises felt.

38. The hammer shank stop rail mechanism as recited in claim 36, wherein said stop rail is configured in a transverse cross-section which has contoured surfaces for said longitudinal first and second sides.

39. The hammer shank stop rail mechanism as recited in claim 36, wherein said stop rail comprises a hard felt material having an exterior felt lining.

40. The hammer shank stop rail mechanism as recited in claim 36, wherein

said stop rail comprises an extruded aluminum material having a rubber insert at its first longitudinal edge.

41. The hammer shank stop rail mechanism as recited in claim 36, wherein said stop rail comprises an extruded aluminum material having a rubber tube at its first longitudinal edge.

42. The hammer shank stop rail mechanism as recited in claim 36, wherein said control comprises a foot pedal.

43. The hammer shank stop rail mechanism as recited in claim 36, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano has its hammer shank stop rail mechanism being actuated by said control.

44. The hammer shank stop rail mechanism as recited in claim 36, further comprising an electric piano-type keyboard, in addition to said conventional keyboard, which outputs electrical signals during time periods that said piano does not have its hammer shank stop rail mechanism being actuated by said control.